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ABSTRACT

Until recently, older workers have not been recognized as a group requiring special attention in the area of fair employment practices. Thus, progress has been slow towards the development of valid and reliable indices of performance which are applicable across the life span. Research shows that many measures of employee evaluation provide no norms for older groups; however, there is some evidence to justify a concern for age discrimination in testing. Test constructors should minimize extraneous factors (environmental effects, speed, anxiety) typically shown to bias the assessment of older workers. For example, in a recent study of computer operators aged 18 to 59, tests from a specially developed test battery were significantly related to performance, while a more widely used test battery had significant correlations with age. Further research on the evaluation of older workers is needed. (JAC)

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Life-Span Issues in the Fair and Non-Discriminatory Evaluation of Workers

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Life-Span Issues in the Fair and Non-Discriminatory Evaluation of Workers

Until recently, the older worker segment has not been recognized by personnel specialists as a group requiring special attention in areas concerned with fair employment practices. Thus, progress has been slow towards developing valid and reliable indices of performance which are applicable across the life-span.

To begin an approach to these problems we suggest some alternative models and theoretical positions for providing an impetus for renewed interest in this area. This approach is intended to spur academicians and practitioners alike into a more useful framework for objective assessment of older worker potential.

The decisions that will be made concerning the older worker will need an appropriate framework for accurate judgment. The most pressing problem associated with these decisions pertains to the paucity of research on differences in ability across the life span. Chapanis (1974), in analyzing industrial measures of ability presently used, was quite discouraging in his conclusions. In essence, many of the measures being used to evaluate individuals provide no norms for older groups; rather the tests were specifically normed on younger groups of males and may be discriminatory against older adults.

There is some evidence justifying a concern for age discrimination in testing (Arvey & Mussio, 1973; Salvendy, 1974). Salvendy (1974) used a concurrent validation (cross-sectional analysis) procedure to determine whether different predictions on performance could be arrived at across various age groupings. The results suggested at least some support for age discrimination in industrial testing. Although the older subjects had significantly lower

scores on the predictor battery, their performance on the job was equal to that of a younger group. Therefore, based on the predictor battery, fewer older adults would have been selected for the job, even though they had the potential for satisfactory performance. To minimize adverse impact, Salvendy suggested the use of different regression equations for older and younger groups. Arvey and Mussio (1973) arrived at similar conclusions.

In our opinion, these authors are not addressing the major problem. Rather than using different regression equations with measures that may discriminate against older workers, test constructors should strive towards producing measures which minimize extraneous factors (e.g., environmental effects, speed of response, anxiety) typically shown to bias our assessment of older employees. Researchers need to design measures which evaluate those abilities necessary and/or sufficient for successful job performance. Griew (1964) points out that most researchers assess the older workers in the lab at their maximum potential when the actual job does not require such performance. This is one extremely important explanation for the typical differences associated with the lab versus real world performance. Since workers are often not required to produce at the upper limits of ability there may be little utility in designing tasks that tap that upper range.

Murray (1951) was one of the first to attempt an analysis of "functional age." Functional age was operationalized as an indicant of an individual's ability level for a particular task treating chronological age with much less importance. This initial attempt focused specifically on physiological differences (i.e., visual acuity, dark adaptation threshold, auditory acuity, systolic blood pressure, and grip force). The results provided by Murray were in support of a differential aging process within age categories. Apparently, some older workers were performing equal to and better than their younger

counterparts. Grouping individuals by chronological age led to the elimination of meaningful functional relationships which could be used in predicting subsequent performance.

Wohlwill (1970, 1973) brought the issue of chronological age to the foreground, indicating the lack of utility in separating individuals into specific "age" groupings. If an accurate assessment of regular patterns of age differences could be achieved, this would result in increased predictive validity of our assessment techniques.

Schonfield (1974) points out that with increasing age the variance associated with performance rises significantly. Even more important, within the individual a great deal of variability was associated with the aging of physiological and psychological functions. These statements seem to negate the traditional impression of the older worker as a homogeneous group of individuals. Mohler (1973) also indicates that some specific human capabilities are maintained at high levels of proficiency throughout the life span (e.g., talent, reasoning, judgment, and experience). This indicates that it may be very difficult to defend the use of arbitrary age cut-offs as indicative of subsequent performance.

One problem arising in the concept of functional age was the overemphasis of performance decrement (Schaie & Gribben, 1973). Many researchers neglected to analyze stable processes with age, as well as those which improve with age (e.g., crystallized intelligence, experience, etc.). There is a clear need to evaluate variations in functional processes with age in terms of both incremental and decremental changes. Also, functional age changes may need to be viewed more specifically in terms of the various job contexts. Heron and Chown (1967) have emphasized the wide diversity of functional requirments across different occupations which could confuse the interpretability of a global measure of functional age.

A great deal of literature has been accumulated with the older adult in paced versus unpaced tasks (Botwinick & Shock, 1952; Canestrari, 1963; Eisdorfer, 1965; Panek, Barrett, Alexander, & Sterns, 1978; Talland, 1966; Tune, 1966). In general, older adults attach more importance to accuracy rather than speed in unpaced tasks. Therefore, substantial differences could be displayed between younger and older workers based upon their differential weighting of importance. This is also supported from Broadbent and Gregory's (1963) work on selective attention (i.e., olds being less likely to make errors of commission). Canestrari (1963) concludes that olds, when allowed to select their own pace, performed significantly better. However, Salvendy and Pilitsis (1971) tested a group of workers between 45 and 67 concluding that the older workers selected a pace beyond their abilities, to compensate for felt deficiencies in their performance. These conflicting results provide some indication for the diversity of requirements associated with different jobs. For instance, Eisdorfer (1965) was able to maintain accurate performance on a paced task with older subjects by increasing the inter-stimulus interval. Presenting a visual detection task at a rapid pace resulted in decrements in performance with increasing age (Talland, 1966). Panek, Barrett, Alexander and Sterns (1978) showed that individual differences for preferred levels of speed within and between tasks existed across the life-span. These results point out the importance of understanding the dynamics of the task and the individual.

McFarland (1973) has indicated three major areas of neglect concerning variations in performance with age: 1) ability and/or skills for specific jobs, 2) information processing, and 3) specific job analysis techniques. The initial research begun in these areas will be briefly discussed in this section.

Aldag and Brief (1973) emphasize the lack of information concerning variations in task characteristics and individual perceptions of task

requirements on subsequent performance. Barrett (1977) provides a model that deals specifically with these deficiencies including those variables which impact upon the individual performing the job (e.g., preferences, ability, nd intrinsic and extrinsic factors associated with the job). The Barrett model advocates an optimal match or congruence among abilities, preferred attributes, expectancies, and task complexity where ideally this match contributes to high levels of productivity, work satisfaction, and organiztional tenure. The major importance of this theory is in its consideration for both individual ability levels and preferences which influence preferences for job attributes. The major determinant of job satisfaction is the discrepancy between preferred and described job structural attributes with individual ability level being the major determinant of job performance. If psychologists were able to match the relevant task demands to older workers most capable of performing the job, then that older employee could be hired for the position and perform quite adequately. Using general measures of functional age may contribute extensively to the demise of an older worker placed in a task in which the requirements have been ill-defined.

Phillips, Barrett, and Rush (1978), following the predictions of the congruence model, analyzed age differences in preferred job attributes. If olds and youngs differ in preferences, then characteristics of the job which satisfy the young may dissatisfy the older worker. In support of the congruence model, individuls who described their jobs as being congruent with their preferences tended to have high levels of satisfaction. These authors were successful in classifying individual performance based purely on preferences. The older and younger groups had distinctly different preferences for job characteristics. However, their descriptions of the job were similar. The olds and young exhibited different preference profiles. The older group tended to prefer the

intrinsic factors of the job (e.g., involvement); while the younger group focused more upon the extrinsic factors (e.g., social opportunities). The authors point out that there was no consistent relationship between age and satisfaction. This lack of relationship was attributed to both the importance of task characteristics and individual differences. The authors specifically state the individual differences were much more important than age group, therefore a major concentration of effort should be directed to the analysis of "personal" versus "average" profiles.

With a congruence model as a basis there needs to be an emphasis placed upon identifying relevant individual differences in ability. McFarland (1973) indicated one of the major deficient areas in research is in the area of information processing. Recently, extensive analyses were conducted to assess the differences in information processing ability and how these differences are associated with age (Avolio, 1978; Barrett, Mihal, Panek, Sterns, & Alexander, 1977; Panek, Barrett, Sterns, & Alexander, 1977; Panek, Barrett, Alexander, & Sterns, 1978 in press; Sterns, Barrett, Alecander, Greenawalt, Gianetta, & Panek, 1976; Sterns, Barrett, Alexander, Panek, Avolio, & Forbringer, 1977; Sterns, Barrett, Alexander, Valasek, Forbringer, & Avolio, 1978).

Panek et al. (1977) provide a review of age changes in perceptual information processing ability relative to both visual and auditory functions. This review could aid in the assessment of older workers given the nature of the changes associated with these sensory functions. They provide information to aid in the analysis of differing perceptions of older workers concerning task attributes.

The major contributions of the work pertaining to individual differences has been seen in several areas (e.g., visual and auditory selective attention, perceptual style, reaction time, decision making, visual scanning patterns).

These researchers have established various age patterns associted with changes in information processing ability.

Applying these measures of information processing to the industrial setting may assist in identifying individuals whose abilities are congruent with particular job requirements. Additional efforts will need to concentrate on the relationships between various preference measures and abilities across task settings.

The stated objective of fair or nondiscriminatory employment practices is to select, promote or retain individuals for a particular job based solely on their ability to perform that job. As is often the case, the apparent simplicity of this goal becomes quite complex upon attempted implementation. The employer's desire to obtain the best available people for particular jobs, imperfect knowledge regarding the relationship between individual characteristics and the ability to perform those jobs, and imperfect measurement of both individual characteristics and job performance all contribute to this complexity.

Early studies in subgroup validation of selection instruments focused on bias in the instruments themselves. These early studies assumed that a test was fair only if the mean test score of population subgroups was the same. This assumption eliminates the use of any variable for which real between group differences exist.

In light of the evidence for the widespread existence of group differences (Tyler, 1965), and the almost universal relationships between identifiable group properties (such as race, sex, age, etc.) and psychological variables (Meehl, 1967) the early concentration on test bias <u>per se</u> has been dropped. It was soon recognized that the real purpose in attempting to define discriminatory testing was to evaluate the use of test results. The fact that one subgroup may score below another on a selection test does not in itself necessarily result in bias.

Virtually every recent discussion on discriminatory testing or discrminatory employment selection has centered around the statistical basis and definition of between-group bias for subgroups of a particular population.

Given the present problems with defining discrimination, purely statistical treatments of this subject are, however, inadequate. Traditionally, test theorists and individuals concerned with the use of test data in selection processes have directed their attention primarily toward concerns of forecasting accuracy or predictive valdity. The distinction must be made between correlations which arise from the fortuitous correspondence of events (coincidential validity) and those which are the result of genuine causal relationships (intrinsic validity). Barrett et al. (1978) and Dunnette (1963) go so far as to propose that predictive validity coefficients in the absence of construct validation should be accorded a much lower status among the body of measurement evidence.

Intrinsically valid selection tests, then, are those which measure those individual characteristics which are necessary for the successful performance of the job under scrutiny. This leads to three fundamental conclusions. The first is that the thorough analysis of the job of interest is essential to the process for nondiscriminatory selection.

The second conclusion is that the selection instruments used must have more than statistical validity to recommend them. The individual characteristics measured by the selection devices must be necessary for the successful performance of the tasks involved in the particular job for which people are being selected.

The final conclusion is that these two requisites are not independent of each other. A statistical statement of the correlation between predictors and criteria is but a single bit of information (i.e., a numerical index) of the usefulness of a particular instrument toward selecting those individuals most

likely to perform well at a job without respect to non-valid (e.g., race, sex, age, etc.) characteristics. The entire process of careful and thorough job analysis, the development of performance standards based on that analysis and the derivation of selection devices designed to measure individual skills, abilities and other characteristics that correspond as closely as possible to the job components must be undertaken as a composite.

In a recent study of 60 Computer Operators ranging in age from 18 to 59 this philosophy was applied in a concurrent validation study. Tests from the specially developed test battery were significantly related to performance, with only one test having a small significant relationship to age. A more widely used test battery was not valid and had significant correlations with age. The implications are clear, if the traditional test battery had been used it would not have been valid and would have disriminated against the older workers.

Insert Table 1 about here

Through an extensive analysis of the literature, it was revealed that current measurements for assessing older workers are often inadequate. The move towards functional age measurement has resulted in preliminary efforts into establishing guidelines for assessing older worker performance. The efforts in determining functional age changes have often been shotgun approaches to analyzing specific variables of interest. There has been no real concerted effort to provide a model or models of differences in age across individuals in terms of specific job requirments.

The general area of literature concerning the evaluation of the older worker seems to be at a point of stagnation. This is rather disappointing in light of the results concerning individual differences in information processing ability across the life span. Considering the wealth of information there has

been minimal effort towards applying these information processing measures to real world settings (Barrett, Mihal, Panek, Sterns, & Alexander, 1977).

There are several possibilities for providing significant contributions to the evaluation of older worker potential. Some alternatives for improvement of research in the area come from the suggestions of the Barrett congruence model, the use of componential analysis, and the continuation of investigative efforts into operationalizing individual differences in preferences and information processing.

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Table 1

Correlations of Predictor Tests with Performance Appraisal and with Age for Computer Operators

(N = 60)

	Performance Appraisal Composite	Age
Widely Used Test Battery:		
Events Logic Test	.11	-.17
Visual Checking Test	.17	-.33**
Diagramming Test	.13	-.33**
Specially Developed Test Battery:		
Short-term Memory Test	.12	-.20
Practical Judgement Test	.03	-.19
Verbal Deductions Test	.21*	-.13
Perceptual Speed & Accuracy Test	.26*	-.23*

*$p < .05$

**$p < .01$